

Claims

1. A fermentation method of astaxanthin using *Phaffia rhodozyma* comprising the steps of:  
(a) in the growing phase, feeding of a nutrient medium containing glucose or sucrose based on the specific growth rate ( $\mu$ ) of *Phaffia rhodozyma* cells, and  
5 (b) in the astaxanthin production phase, feeding of the nutrient medium based on the astaxanthin production rate, while keeping the glucose concentration in the fermentation broth almost 0 g/L during the whole fermentation period.
2. The fermentation method according to claim 1, wherein the fermentation is carried out  
10 at a  $\mu$  range between 0.01 and 0.10 h<sup>-1</sup>.
3. The fermentation method according to claim 1, wherein the pH control reagent is NH<sub>4</sub>OH solution, NaOH solution or both.
4. The fermentation method according to claim 1, wherein the fermentation is carried out at a pH between 4.5 and 7.0.
- 15 5. The fermentation method according to claim 1, wherein the fermentation is carried out at a temperature in the range of from 15 to 24°C.
6. The method according to claim 1, wherein the fermentation is carried out at DO between 10 and 90 %.
7. The fermentation method according to claim 1, wherein the nutrient medium contains  
20 as energy sources polymerized forms of glucose, sucrose and other polysaccharides, molasses and corn syrup, glycerol and other polyols, and carboxylic acids, and, as nitrogen sources, yeast extract, meat-extract, peptone, casein, corn steep liquor, urea, amino acid, nitrates, ammonium salts and the like.
8. The fermentation method according to claim 1, wherein the concentration of D-glucose  
25 or sucrose in the nutrient medium is from about 10 g/L to about 800 g/L.
9. The fermentation method according to claim 1, wherein the fermentation is carried out at gassing rates of about 0.01 to about 2.0 volume of gas/volume of medium/min. in the fermentation vessel.

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10. The fermentation method according to claim 1, wherein *Phaffia rhodozyma* is *Phaffia rhodozyma* ATCC96594:-

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